

ASSEMBLY ELEMENTS FOR MODULAR SYSTEM

FIELD OF THE INVENTION

[0001] The present invention generally relates to a structural connection system for the construction of shelves, work stations, partition panels and supporting panels in a modular office environment. Specifically, the field of the present invention relates to a connection system which features a set of three interconnecting members whose primary role is to fasten, support and/or hold up different surfaces for modular construction.

BACKGROUND ART

[0002] Numerous modular structural elements are available to fasten or support modular surfaces.

[0003] Prior art illustrates devices known to hold up such surfaces or modular structural elements disclosed in U.S. Pat. No. 3,137,899 by Troutner, U.S. Pat. No. 3,268,251 Troutner, U.S. Pat. No. 3,330,087 Troutner, and U.S. Pat. No. 3,570,204 Birkemier.

[0004] Each one of these references illustrates connection systems in modular constructions for joining structural surfaces or elements. Some connectors comprise coupling elements with two L-shaped members, which when joined together by bolts or the like, house and support the modular elements used to build a workstation. These connection systems couple and reinforce the modular elements forming knots of force distribution increasing resistance but in most cases, a different type of connection is necessary for each structural element to be joined, thereby making the construction considerably complex. Therefore, experts are needed with the knowledge and the ability to recognize each type of connection for each form of coupling.

[0005] Likewise, these connection systems, even though they offer sufficient rigidity, do not comprise an aesthetic attractive design after they have been built making necessary the

use of aesthetic shells in order not to show its bolts or other internal assembly elements.

OBJECT OF THE INVENTION

[0006] Therefore, a first object of the present invention is to avoid the disadvantages posed by the background art. More particularly, an object of the present invention is to provide a coupling connecting system for universal layouts in such a manner that using the same connecting element it is possible to build the entire structure having functional and attractive features.

[0007] A second object of the present invention is to provide an easy to assemble connection system having efficient results concerning rigidity and load resistance, to fasten and/or support beams and/or workstation surfaces, as the case may be.

[0008] A third object of the present invention in no way of lesser importance, is the need to provide a mechanically fit connection system for building modular structures as well as it being sufficiently attractive from an aesthetic perspective.

[0009] Pursuant to these objectives, as well as any other that could arise, one feature of the present invention is an arrangement characterized by a set of three interconnecting members whose primary function is to fasten, support and/or hold up different surfaces for modular construction in such a manner that by using the same connection means, it is possible to erect the entire modular structure.

[0010] Therefore, the connection system comprises ~~a first~~ an off-centered support member whose primary function is to firmly be fastened to a square section beam, at several locations along said beam, with the purpose of supporting and fastening the modular workstations and inversely, for fastening in a hanging position the drawers or storage units.

[0011] Likewise, it also comprises a ~~second~~ vertical support member, whose primary function is to be firmly fastened to a square section beam along several locations thereof, with the primary purpose of serving as a connecting point with the legs or supporting points

(MARKED-UP VERSION OF SPECIFICATION)

with the floor of the modular system in general.

[0012] Together with the previous members, the invention comprises a ~~[[third]]~~ closing support member characterized for having a cylindrical piece with a U-shaped diametric channel as a complement of the ~~first and second supports~~ off-centered support member and the vertical support member with fastening means providing firmness and sound adjustment along a square section beam.

[0013] The ~~second~~ vertical support member has the characteristic of changing its functionality in order to serve as support for several line accessories such as: flap supports, computer supports, auxiliary surface support, etc.

[0014] The ~~[[third]]~~ closing support member having a U-shaped diametric channel serves as a complement for the operation of the two previous ~~[[pieces]]~~ members, the off-centered support member and the vertical support member, through the use of attachment or fastening means. Its function within the set is to serve as structural fastening means for joining the ~~first and second member~~ off-centered support member and the vertical support member.

[0015] The novel features considered the grounds for the invention are particularly disclosed in the attached claims, and the additional advantages thereof will be better understood through the detailed description below with preferred embodiments and numbered drawings referred to.

BRIEF DESCRIPTION OF THE ILLUSTRATIONS

[0016] In order to make the invention and its advantages compared with prior art more readily clear and concise, the possible illustrative embodiment forms which are non-limiting of the application of said principles, are described below with the help of the attached drawings.

[0017] FIG. 1 shows an isometric view of the ~~[[first]]~~ off-centered support member.

[0018] FIG. 2 illustrates in detail an isometric view of the ~~second~~ vertical support member.

[0019] FIG. 3 shows an isometric view of the ~~[[third]]~~ closing support member.

[0020] FIG. 4 illustrates an isometric view of ~~a member coupling embodiment~~ an off-centered support member coupling to a vertical support member in accordance with one exemplary embodiment.

[0021] FIG. 5 illustrates an isometric view of ~~another member coupling embodiment~~ an off-centered support member coupling to a closing support member in accordance with another exemplary embodiment.

[0022] FIG. 6 illustrates a front view of a vertical support member in accordance with an exemplary embodiment.

DETAILED DESCRIPTION

~~{0022}~~ [0023] The present invention comprises according to FIG. 1, ~~a first~~ an off-centered support member 1 whose primary role is to firmly be fastened to a conventional square section beam, at several ~~location~~ locations along thereof, with the purpose of supporting and holding the modular workstation surfaces and inversely for holding in a hanging manner the drawers or storage units. This ~~[[first]]~~ off-centered support member 1 comprises a central cylinder 2 having a top and bottom surface from which left 3 and right 4 side sections ~~detach~~ extend outwardly, wherein the right side section 4 is substantially shorter longitudinally in comparison to the left side section 3 pursuant to FIG. 1. The right side section 4 extends in opposite direction of left side section 3.

~~[0023]~~ [0024] In a preferred embodiment pursuant to ~~figure~~ FIG. 1, the right side section 4 elevates above the projected surface of the central cylinder 2 as it longitudinally extends outward.

[0024] [0025] In an alternate non-illustrated embodiment, both the left side section 3 as well and the right side section 4 may extend outwards parallel to the projected surface of central cylinder 2 or beneath or above the top surface thereof.

[0025] [0026] Adjacent the axial end of left side section 3, a first cylindrical platen 5 is extended and adjacent to the axial end of the right side section 4, a second cylindrical platen 6 is extended in such a manner that the axis of said first and second cylindrical platens 5 and 6 are parallel to the central cylinder's 2 axis. Piercing through the thickness of the first and second cylindrical platens 5 and 6, an orifice is present for fastening means 7 ~~[[and 8]]~~ in each of said first and second cylindrical platens 5 and 6.

[0026] [0027] Additionally, the central cylinder 2 possesses a diametric channel housing 9 which extends over the bottom surface, arranged in order to house a conventional square section beam, at several locations along thereof together and with the aid of the other connecting members according to construction needs.

[0027] [0028] FIG. 2 illustrates a ~~second~~ vertical support member 10 whose primary function is to be firmly fastened to a square section beam along several locations thereof, together and with the aid of the other connecting members according to construction needs, with the primary purpose of serving as a connecting point with the legs or supporting points with the floor of the modular system in general.

[0028] [0029] The ~~second~~ vertical support member 10 comprises a vertical support cylinder 11 having a top and bottom surface, having a diametric channel housing 12 which extends over the top surface, arranged in order to house a conventional square section beam, at several locations along thereof together and with the aid of the other connecting members according to construction needs.

[0029] [0030] From the bottom surface of vertical support cylinder 11 of the vertical support member 10, a male ~~(pin)-type~~ or pin element 13 is axially extended.

(MARKED-UP VERSION OF SPECIFICATION)

{0030} [0031] In a preferred embodiment, as shown in FIG. 6, said male or pin [[type]] element 13 has a grooved perimeter ~~semi-conic~~ semi-conic arrangement.

{0031} [0032] In an alternate embodiment said male or pin [[type]] element 13 may have a grooved perimeter cylindrical arrangement or a combination of cylindrical arrangement finishing off in ~~semi-conic~~ semi-conic.

{0032} [0033] The male or pin [[type]] element 13 has a diametric arrangement that does not go beyond the diameter of vertical support cylinder 11 of vertical support member 10. In a preferred embodiment, said diameter of said male or pin [[type]] element 13 is less than the diameter of vertical support cylinder 11 of vertical support member 10 and its central axis always coincide among them.

{0033} [0034] Vertical support cylinder ~~Cylinder~~ 11 of vertical support member 10 presents two pass-by openings 14 which join the bottom surface with the top surface, located adjacent to the edges of the diametric channel housing 12. Said vertical support cylinder 11 openings of vertical support member 10, are arranged as pass-by elements for the fastening means.

{0034} [0035] The ~~second element of the~~ vertical support member 10 has the feature of changing its functionality in order to serve as support for several different line accessories such as: flap supports, computer supports, auxiliary surface support, etc.

{0035} [0036] FIG. 3 illustrates a [[third]] closing support member 15 characterized for having a closing support cylindrical piece 16 with a U shaped diametric channel housing 17 as complement of the ~~first and second supports~~ off-centered support member 1 and the vertical support member 10 having pass-by fastening means 18 providing rigidity and sound adjustment along a conventional square section beam.

{0036} [0037] Said [[third]] closing support member 15 comprises said closing support cylindrical piece 16 having a top and bottom surface, wherein said diametric channel housing 17 extends [[over]] across the top surface, arranged to house a conventional square section

beam, at several locations along thereof together and with the aid of the other connecting members according to construction needs.

{0037} [0038] The closing support ~~cylindrical piece~~ member 15 has two pass-by ~~fastening means openings 18, or pass-by openings,~~ which join the bottom surface with the top surface, located adjacent to the edges of the diametric channel housing 17. Said openings of the closing support cylindrical piece 16 are arranged as pass-by elements of the fastening means.

{0038} [0039] The ~~[[third]]~~ closing support member 15 having a U-shaped diametric channel housing 17 is the complement for the operation of the ~~two connection pieces off-centered support member 1 and the vertical support member 10~~ through the use of fastening means 18. Its function within the set is to serve as the structural fastening for the connection of the ~~first and second~~ off-centered support member 1 and the vertical support member 10.

{0039} [0040] The central cylinder 2 having a top and bottom surface of the ~~[[first]]~~ off-centered support member 1 comprises two non pass-by openings located adjacent to the edges of the diametric channel housing 9 in order to receive the attachment means or fastening means of the ~~second and third connection members~~ vertical support member 10 and the closing support member 15.

{0040} [0041] During use, the connection system comprises within an assembly embodiment, the step of locating a conventional square section 19 of modular construction within the ~~[[first]]~~ off-centered support member's 1 diametric channel housing ~~[[1]]~~ 9 in order to firmly fasten it with the help of the ~~second~~ vertical support member's 10 diametric channel housing 12, wherein in between both members 1 and 10 said conventional channel is firmly positioned and is fastened using conventional attachment means such as bolts which surpass openings 14 and attach off-centered support member 1 on its bottom surface. This type of coupling is observed ~~[[on]]~~ in FIG. 4. This coupling strengthens the conventional channel and at the same time supports the leg which supports the structure. The leg supporting the structure on the floor may comprise a conventional round tube 20 which connects to the male or pin element ~~fastening piece~~ 13 of the vertical support member 10 by one of its ends as

illustrated in FIG. 4.

[0041] [0042] FIG. 5 illustrates a second connection system alternative comprising the step of locating a conventional square section 19 of modular construction within the [[first]] off-centered support member's 1 diametric channel housing [[1]] 9 in order to firmly fasten it with the help of the [[third]] closing support member's 15 diametric channel housing 17, wherein in between both members 1 and 15 said conventional square section 19 is firmly positioned and is fastened using conventional attachment means such as bolts which surpass openings 18 and attach off-centered support member 1 on its bottom surface. The connection of [[first]] the off-centered support member 1 and ~~second member of the~~ vertical support member 10 has the characteristic of changing functionality in order to serve as support for several different line accessories such as: flap supports, computer supports, auxiliary surface support, etc.

[0042] [0043] It is possible to locate on the first and second cylindrical platens 5 and 6 of the off-centered support member 1, workstation surfaces fastened by attachment means which pierce openings 7 [[and 8]] of the first and second cylindrical platens 5 and 6.

[0043] [0044] In a third embodiment (not illustrated), the [[third]] closing support member 15 grasps the conventional square section 19 with the help of the ~~second~~ vertical support member 10 and, through the use of conventional attachment means (not illustrated), which pierce openings 14 and 18, it is possible to fasten said conventional square section 19.

[0044] [0045] Together, erecting an office modular structure is possible with the use of conventional surfaces, square sections and round tubes or pipes.

[0045] [0046] Only some preferred embodiments of the invention have been illustrated as examples. To this regard, it is understood that the construction of the connection system, as well as construction arrangements may be chosen from a plurality of alternatives without departing from the scope of the invention according to the following claims.

ABSTRACT

~~The present invention relates to a~~ A structural connection system for modular constructions such as shelving, workstation surfaces, partition panels and supporting panels in a modular office environment. Specifically, ~~the invention comprises a~~ structural connection system ~~characterized by~~ comprises at least two members selected from a set of three interconnecting members, whose primary function is to fasten, support and/or hold up different surfaces for modular office construction. ~~The purpose of the invention~~ structural connection system ~~is to provide~~ provides a simple and efficient system of connecting members for the construction of modular offices having constructive features which are adequate in providing ease in assembly and disassembly as well as a structural efficiency sufficiently adequate in supporting loads.